

IDO-IPC8815-V1 Linux软件使用手册

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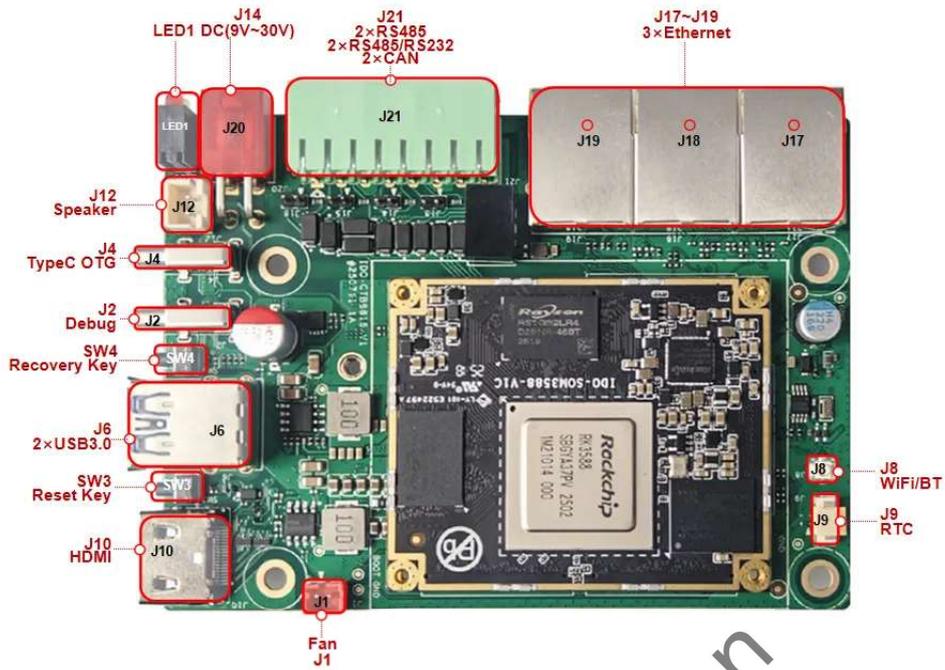
IDO-IPC8815-V1

Linux软件使用手册

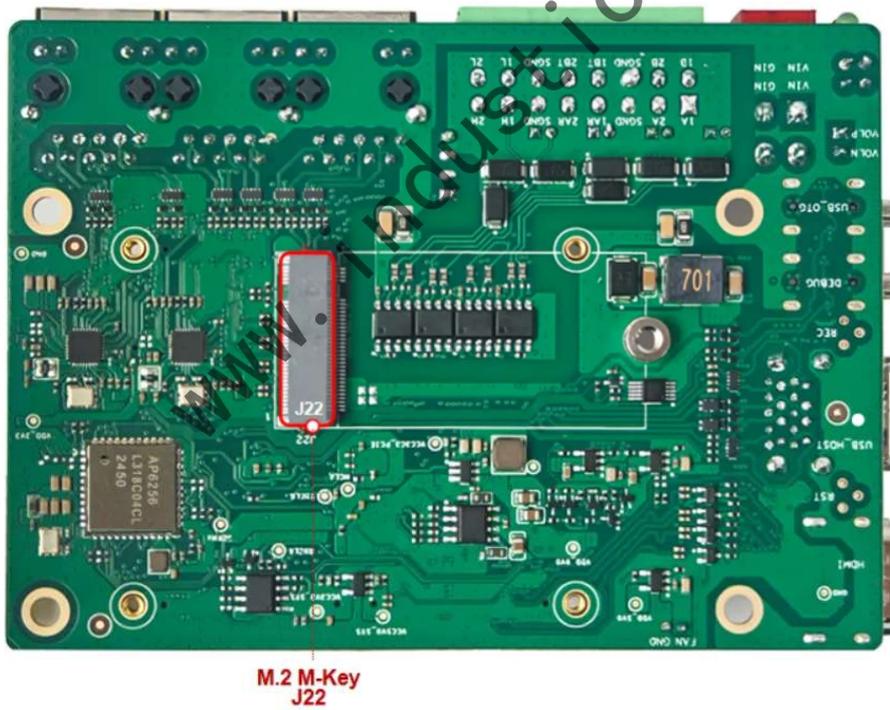
1. 硬件资源概况

1.1. 主板照片

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IDO-CTB8815-V1 正面实物图



1.2. 硬件资源

| 序号 | 名称 | 描述 |
|----|------|-----------|
| 1 | 内核版本 | Linux 6.1 |

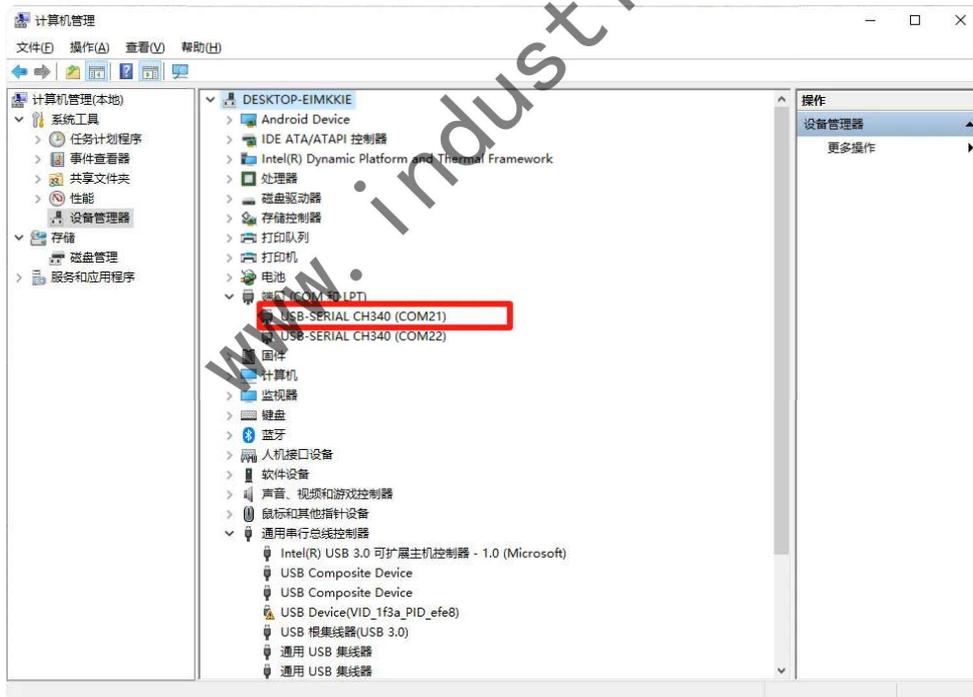
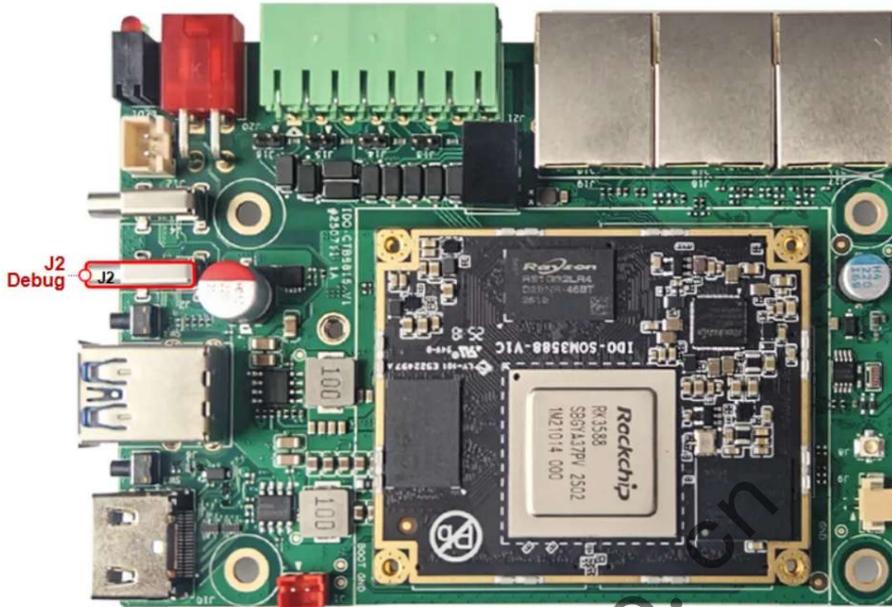
| | | |
|----|----------|-------------------------|
| 2 | 系统版本 | DEBIAN12, UBUNTU20/22 |
| 3 | 内存 | 8GB LPDDR4 |
| 4 | 存储 | 64GB eMMC |
| 5 | 供电 | DC接口12V@2A |
| 6 | 显示 | HDMI2.1 (支持4K@60fps 输出) |
| 7 | 以太网 | 千兆以太网 ×3 |
| 8 | 调试串口 | TTL ×1 |
| 9 | 按键 | RECOVERY ×1 RESET ×1 |
| 10 | 扬声器 | PH2.0-2P(4Q10W) ×1 |
| 11 | WIFI/BT | AP6256 ×1 |
| 12 | USB OTG | USB OTG Type-C ×1 (烧录口) |
| 13 | USB HOST | USB3.0 HOST ×2 |
| 14 | PCIe | PCIe2.1 NVME硬盘 ×1 |
| 15 | UART | RS232 ×2 RS485 ×2 |
| 16 | WIFI/BT | AP6256 ×1 |
| 17 | CAN | CAN ×2 |
| 18 | RTC | HYM8563 ×1 |
| 19 | LED | 2 × 指示灯 (电源指示灯+系统指示灯) |
| 20 | Fan | 5V PH2.0-2P ×1 |

2. Ubuntu22.04接口使用方法

2.1. 登录

2.1.1. 串口

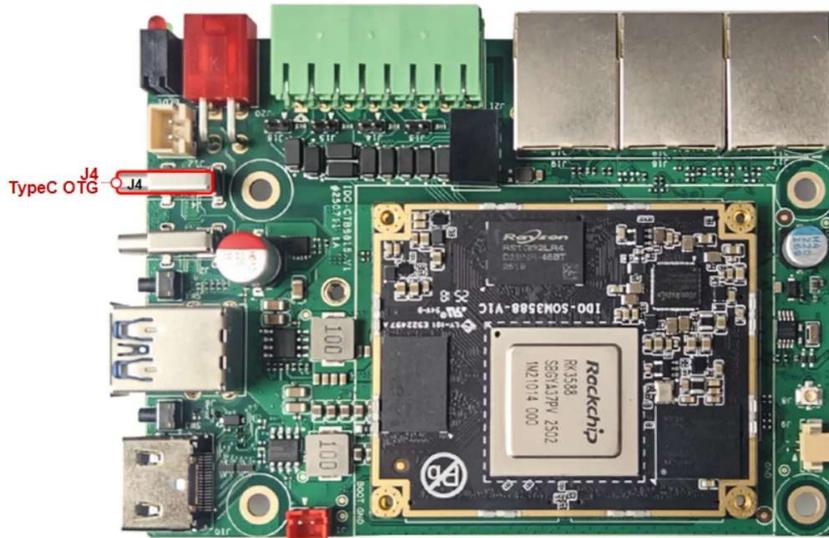
准备一根type-C数据线，接入电脑，串口波特率设置为1500000



账号密码: industio/123456

2.1.2. adb

准备一根type-C数据线，一端接入电脑



```
C:\WINDOWS\system32\cmd.exe - adb shell
Microsoft Windows [版本 10.0.19045.6093]
(c) Microsoft Corporation. 保留所有权利。

C:\Users\Vivek>
C:\Users\Vivek>
C:\Users\Vivek>
C:\Users\Vivek>
C:\Users\Vivek>adb shell
root@industio-desktop:/# ls
ls
bin  etc  lost+found  oem  root  snap  sys  userdata  vendor
boot  home  media  opt  run  srv  system  usr
dev  lib  mnt  proc  sbin  swapfile  tmp  var
root@industio-desktop:/#
```

2.1.3. ssh

ssh industio@ipaddress

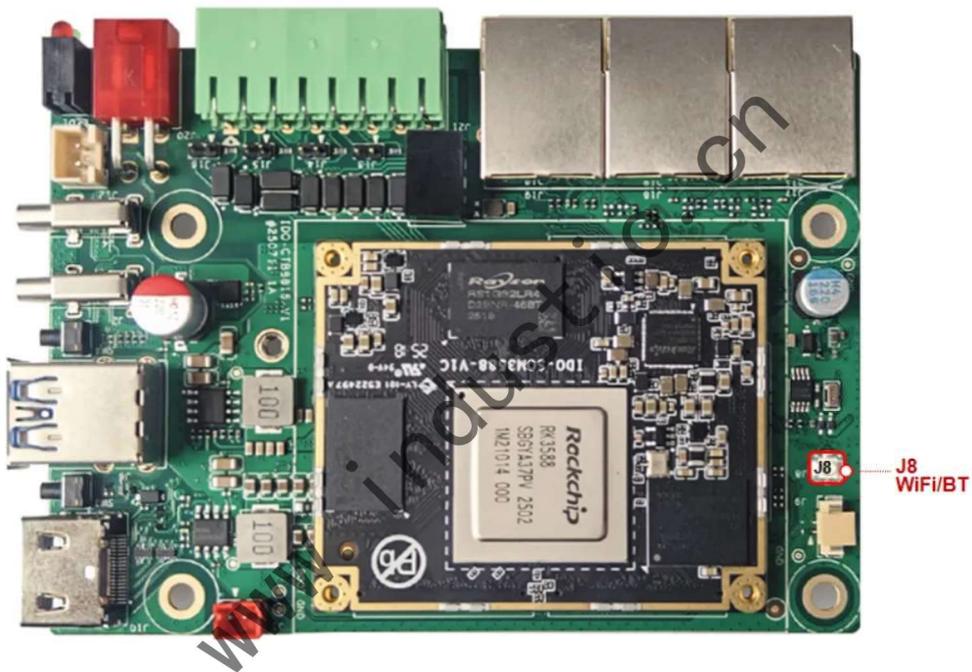
密码：123456

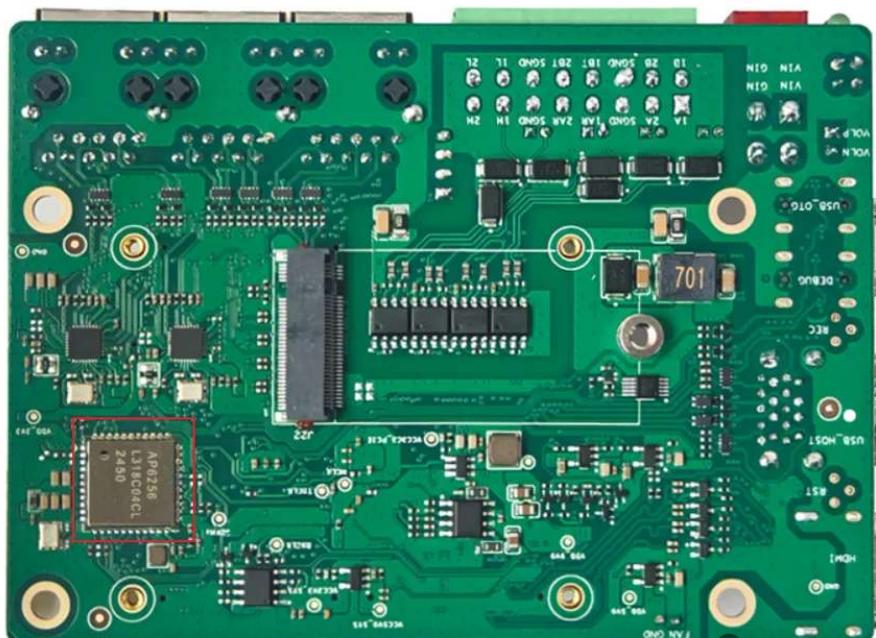
2.2. 以太网


```
1 # ifconfig
2 docker0 Link encap:Ethernet HWaddr 02:42:01:8d:d8:8a
3         inet addr:172.17.0.1 Bcast:172.17.255.255 Mask:255.255.0.0
4         UP BROADCAST MULTICAST MTU:1500 Metric:1
5         RX packets:0 errors:0 dropped:0 overruns:0 frame:0
6         TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
7         collisions:0 txqueuelen:0
8         RX bytes:0 TX bytes:0
9
10 lo      Link encap:Local Loopback
11         inet addr:127.0.0.1 Mask:255.0.0.0
12         inet6 addr: ::1/128 Scope: Host
13         UP LOOPBACK RUNNING MTU:65536 Metric:1
14         RX packets:240 errors:0 dropped:0 overruns:0 frame:0
15         TX packets:240 errors:0 dropped:0 overruns:0 carrier:0
16         collisions:0 txqueuelen:1000
17         RX bytes:22080 TX bytes:22080
18
19 eth0    Link encap:Ethernet HWaddr 0a:dc:b0:80:a4:4b Driver rk_gmac-dw
mac
20         inet6 addr: fe80::8dc:b0ff:fe80:a44b/64 Scope: Link
21         UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
22         RX packets:5 errors:0 dropped:0 overruns:0 frame:0
23         TX packets:5 errors:0 dropped:0 overruns:0 carrier:0
24         collisions:0 txqueuelen:1000
25         RX bytes:362 TX bytes:1004
26         Interrupt:71
27
28 eth1    Link encap:Ethernet HWaddr 0e:e4:0f:db:34:72 Driver yt6801
29         UP BROADCAST MULTICAST MTU:1500 Metric:1
30         RX packets:2167 errors:0 dropped:0 overruns:0 frame:0
31         TX packets:2141 errors:0 dropped:0 overruns:0 carrier:0
32         collisions:0 txqueuelen:1000
33         RX bytes:304107 TX bytes:2548456
34         Interrupt:117 Base address:0x8000
35
36 eth2    Link encap:Ethernet HWaddr 5a:a3:67:6a:96:8c Driver yt6801
37         UP BROADCAST MULTICAST MTU:1500 Metric:1
38         RX packets:91 errors:0 dropped:0 overruns:0 frame:0
39         TX packets:72 errors:0 dropped:0 overruns:0 carrier:0
40         collisions:0 txqueuelen:1000
41         RX bytes:19493 TX bytes:15717
42         Interrupt:127 Base address:0x4000
43
44
```

```
45 wlan0 Link encap:Ethernet HWaddr 9c:b8:b4:9a:73:18 Driver bcm5dh_sdm
46 mc
47 inet6 addr: fe80::9eb8:b4ff:fe9a:7318/64 Scope: Link
48 UP BROADCAST MULTICAST MTU:1500 Metric:1
49 RX packets:0 errors:0 dropped:0 overruns:0 frame:0
50 TX packets:10 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 TX bytes:796
```

2.3. WIFIBT





2.3.1. wifi

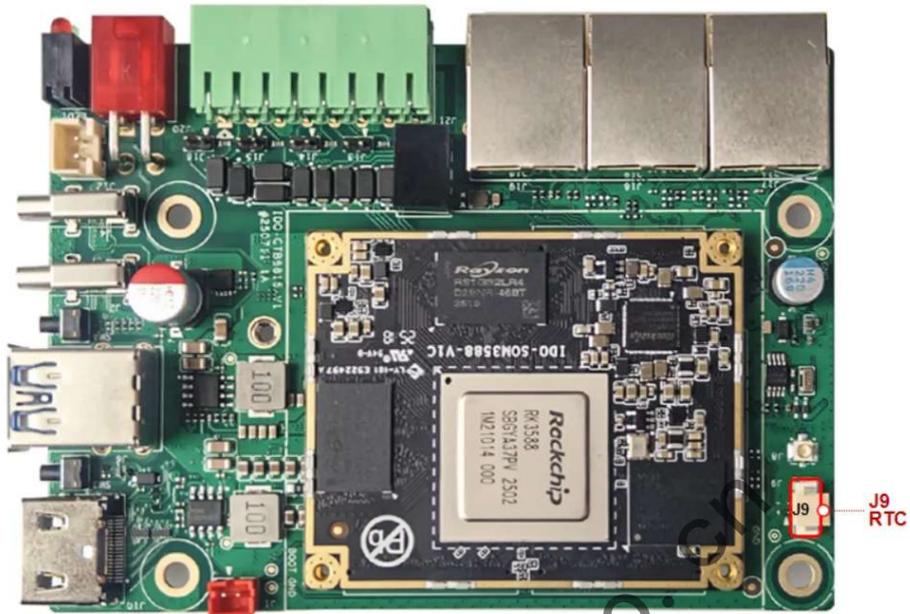
```
▼ Bash |
1 root@industio-desktop:/# nmcli dev wifi list #查询wifi列表
2 root@industio-desktop:/# nmcli dev wifi connect 账号 password 密码 ifname wlan0 #连接热点
3
4 root@industio-desktop:/# nmcli connection show
```

2.3.2. 蓝牙

```
▼ Bash |
1 root@industio-desktop:/# bluetoothctl
2 [bluetooth]# bluetoothctl
3 [bluetooth]# power on
4 [bluetooth]# scan on
5 [bluetooth]# devices #查看蓝牙设备
6 [bluetooth]# trust AC:C4:BD:6C:F2:10 #信任设备
7 [bluetooth]# pair AC:C4:BD:6C:F2:10 #配对
8 [bluetooth]# connect AC:C4:BD:6C:F2:10 #连接
```

2.4. RTC

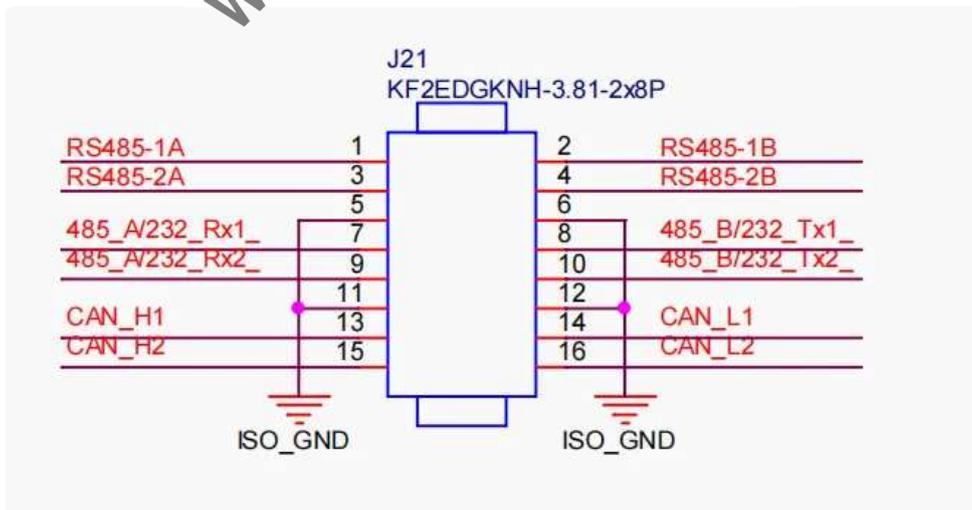
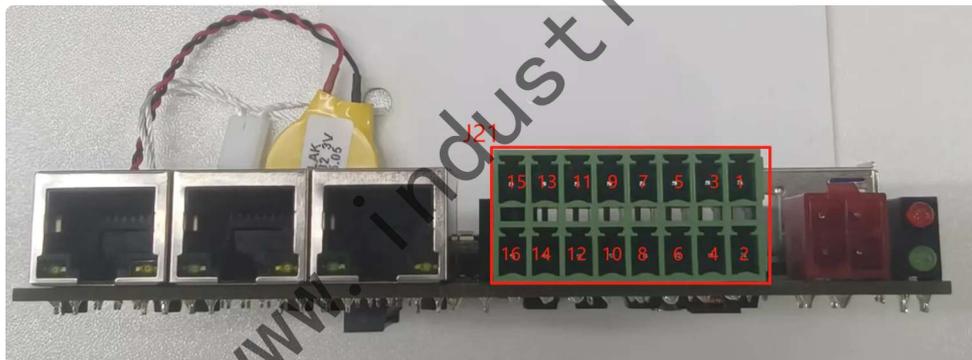
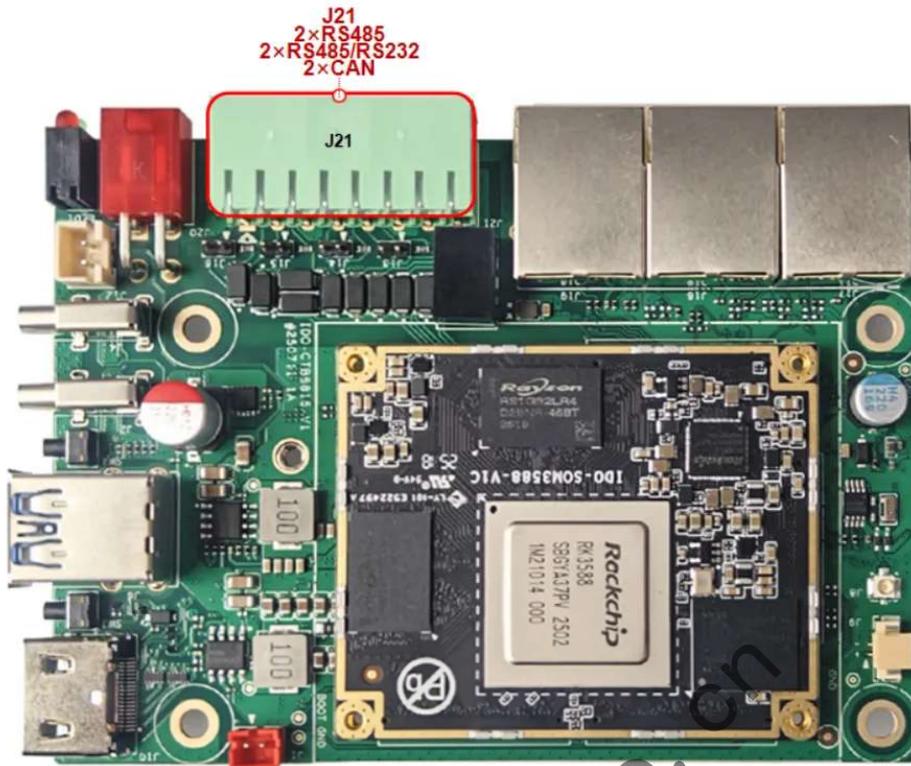
图中标注电池位置



Bash

```
1 root@industio-desktop:~# date -s "2025-10-17 18:34:10"  
2 root@industio-desktop:~# hwclock -w #同步时间到RTC  
3  
4 root@industio-desktop:~# hwclock -r
```

2.5. RS485/RS232



RS485-1

RS485-2

| | | |
|------------|---------|------------|
| /dev/ttyS1 | <-----> | /dev/ttyS6 |
| J21-1 | <-----> | J21-3 |
| J21-2 | <-----> | J21-4 |

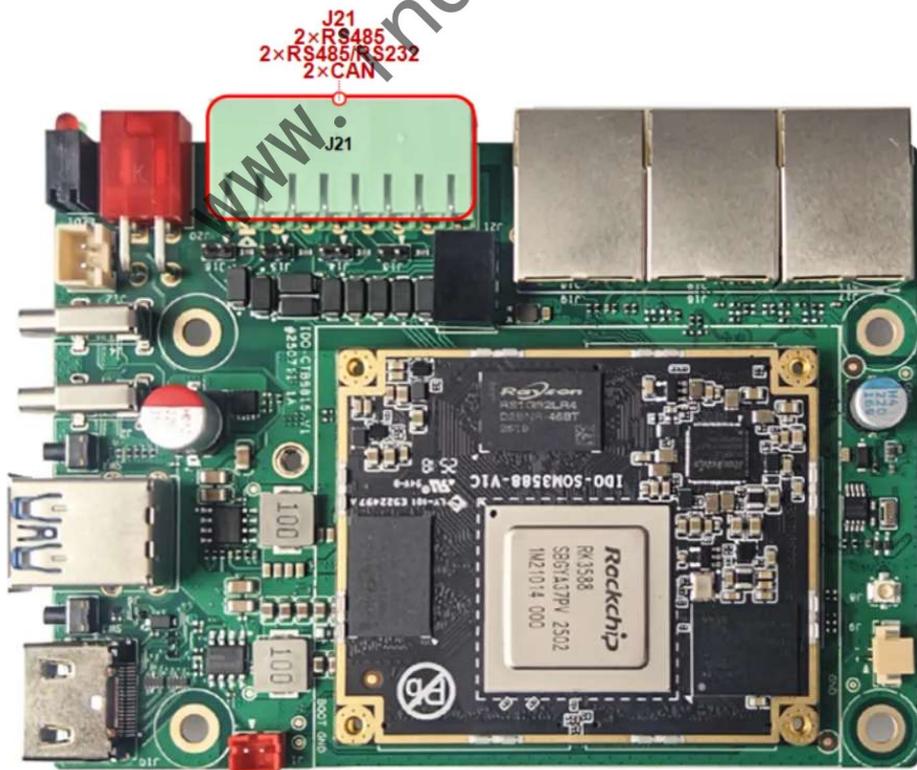
| | | |
|------------|---------|------------|
| R232-1 | | RS232-2 |
| /dev/ttyS3 | <-----> | /dev/ttyS8 |
| J21-7 | <-----> | J21-10 |
| J21-8 | <-----> | J21-9 |

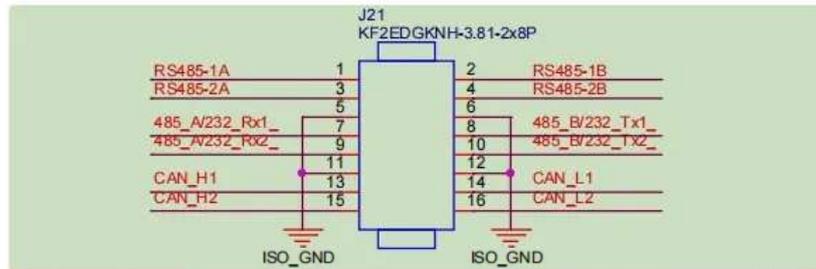
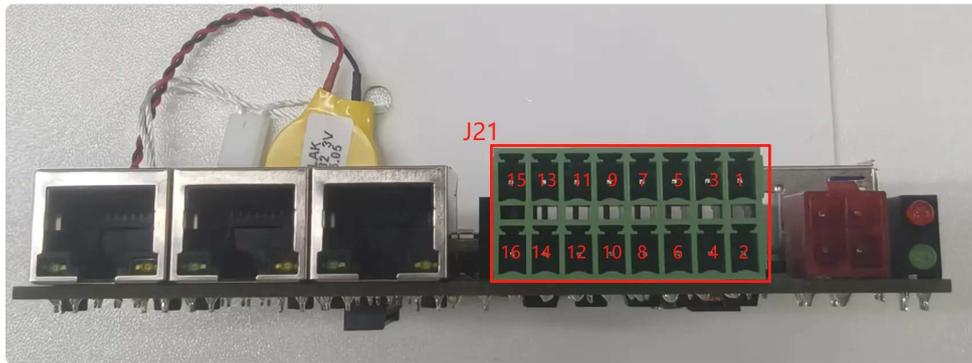
```

▼
                                                                    Bash |
1  microcom -s 115200 -p /dev/ttyS1

```

2.6. CAN





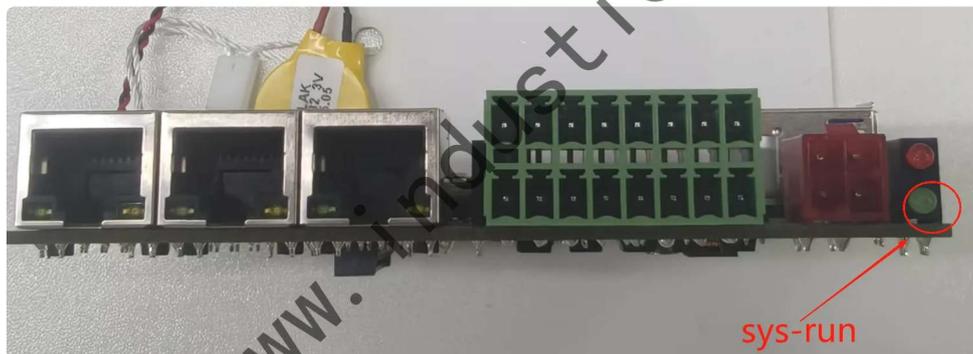
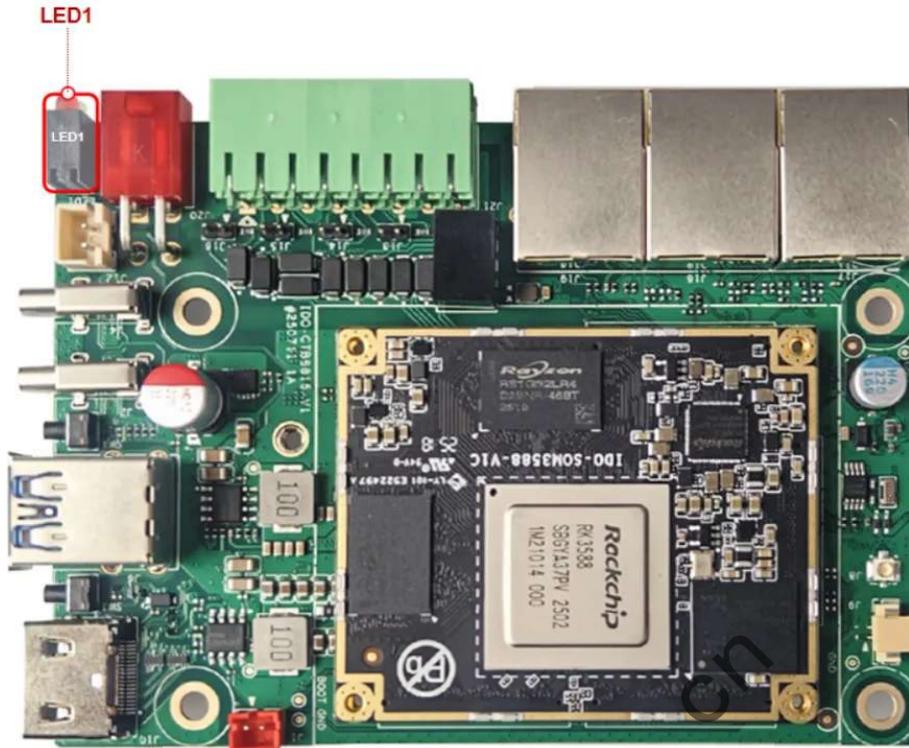
| CAN0 | | CAN1 |
|--------|--------|--------|
| J21-13 | <----> | J21-15 |
| J21-14 | <----> | J21-16 |

```

1 ip link set can0 type can bitrate 1000000
2 ip link set can0 up
3 ip link set can1 type can bitrate 1000000
4 ip link set can1 up
5
6 candump can0& #等待接收
7 cansend can1 123#DEADBEEF #发送

```

2.7. Watchdog



开机后进入系统后，绿灯闪烁。

测试

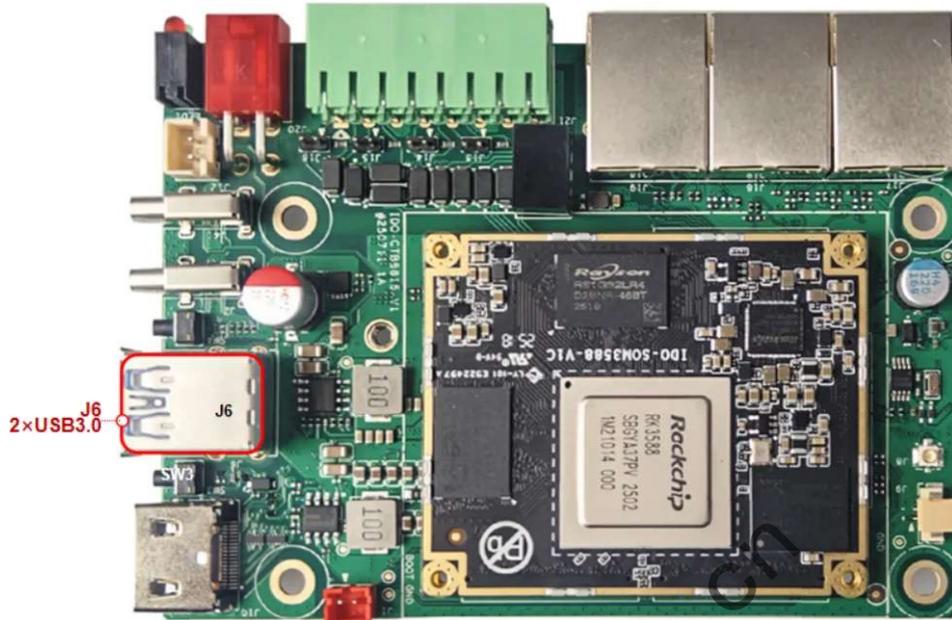
Bash

```

1 #测试需要拔掉烧录线 等待5分钟自动重启
2 # cat /sys/class/leds/sys-led/trigger
3 none rfkill-any rfkill-none kbd-scrolllock kbd-numlock kbd-capslock kbd-kan
  alock kbd-shiftlock kbd-altgrlock kbd-ctrllock kbd-altlock kbd-shiftllock k
  bd-shiftrlock kbd-ctrllock kbd-ctrlrlock mmc2 timer [heartbeat] backlight
  default-on mmc0 rfkill0 rfkill1 rfkill2 rfkill3
4
5 # echo none > /sys/class/leds/sys-led/trigger

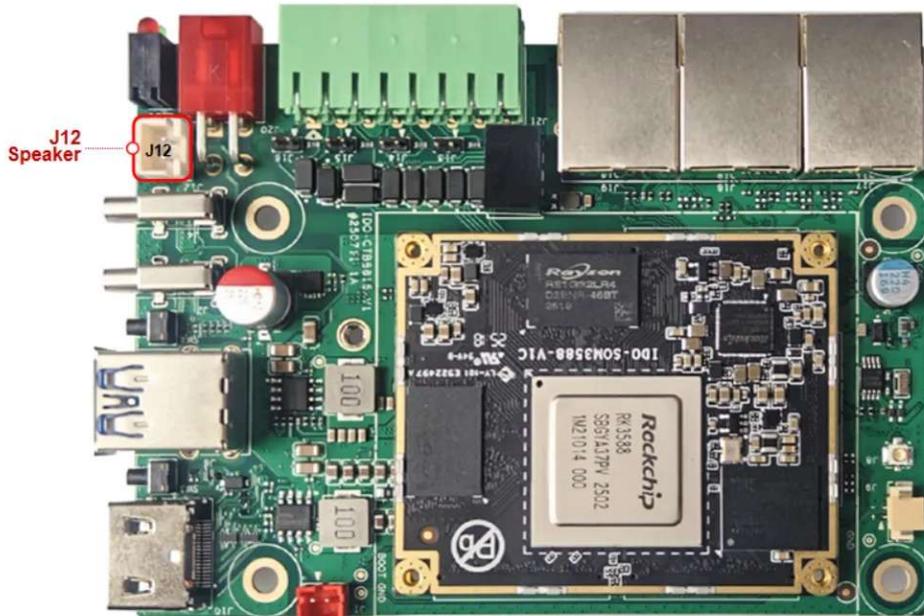
```

2.8. USB3.0



```
Bash |  
1 root@ido:/# df -h  
2 文件系统      容量  已用  可用  已用% 挂载点  
3 /dev/root      114G  8.8G  105G   8% /  
4 devtmpfs      3.9G   0  3.9G   0% /dev  
5 tmpfs         3.9G   0  3.9G   0% /dev/shm  
6 tmpfs         792M  4.0M  788M   1% /run  
7 tmpfs         5.0M   4.0K  5.0M   1% /run/lock  
8 tmpfs         3.9G   0  3.9G   0% /sys/fs/cgroup  
9 tmpfs         3.9G   8.0K  3.9G   1% /tmp  
10 /dev/mmcblk0p6 2.0G  292K  2.0G   1% /userdata  
11 /dev/mmcblk0p7 124M   12M  112M  10% /oem  
12 tmpfs         792M   24K  792M   1% /run/user/1000  
13 /dev/sda1      30G   3.3M  30G    1% /media/industio/TU100
```

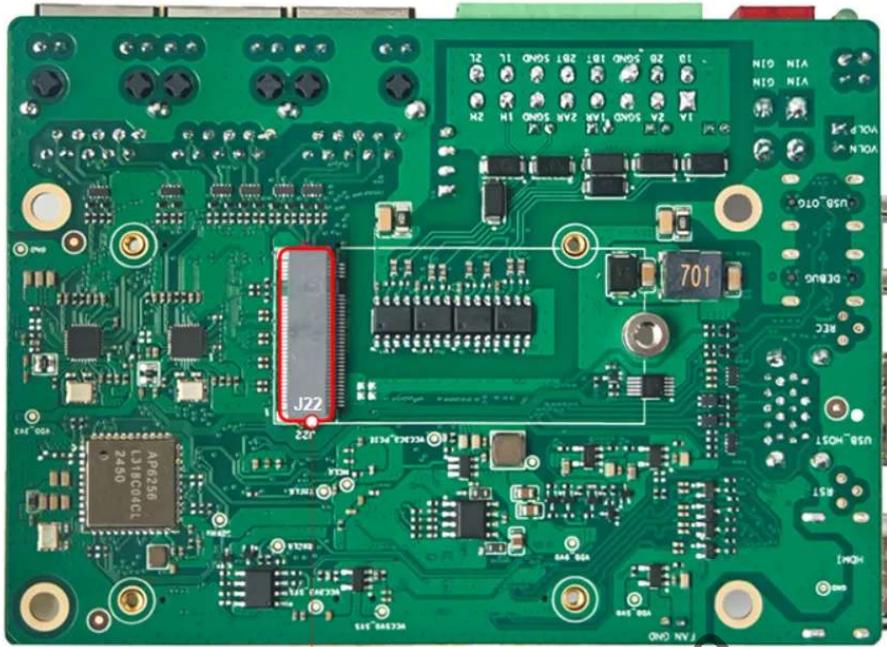
2.9. 声卡



```
1  industio@industio-desktop:~$ cat /proc/asound/cards
2  0 [rockchiphdmi0 ]: rockchip-hdmi0 - rockchip-hdmi0
3                          rockchip-hdmi0
4  1 [rockchipes8388 ]: rockchip-es8388 - rockchip-es8388
5                          rockchip-es8388
6
7  #声卡
8  industio@industio-desktop:~$ aplay -D hw:1,0 One_Last_Time.wav
9
10 #HDMI
11 industio@industio-desktop:~$ aplay -D hw:0,0 One_Last_Time.wav
```

2.10. PCIE

使用m.2固态硬盘测试



M.2 M-Key
J22

www.industio.cn

```

1 root@industio-desktop:/home/industio# fdisk -l
2 Disk /dev/ram0: 4 MiB, 4194304 bytes, 8192 sectors
3 Units: sectors of 1 * 512 = 512 bytes
4 Sector size (logical/physical): 512 bytes / 4096 bytes
5 I/O size (minimum/optimal): 4096 bytes / 4096 bytes
6
7
8 Disk /dev/mmcblk0: 116.48 GiB, 125074145280 bytes, 244285440 sectors
9 Units: sectors of 1 * 512 = 512 bytes
10 Sector size (logical/physical): 512 bytes / 512 bytes
11 I/O size (minimum/optimal): 512 bytes / 512 bytes
12 Disklabel type: gpt
13 Disk identifier: 6D3A0000-0000-4733-8000-3DFD00006CE3
14
15 Device          Start      End        Sectors   Size Type
16 /dev/mmcblk0p1  16384     24575     8192      4M unknown
17 /dev/mmcblk0p2  24576     32767     8192      4M unknown
18 /dev/mmcblk0p3  32768     163839   131072    64M unknown
19 /dev/mmcblk0p4  163840    425983   262144   128M unknown
20 /dev/mmcblk0p5  425984    491519   65536    32M unknown
21 /dev/mmcblk0p6  491520    1540095  1048576  512M unknown
22 /dev/mmcblk0p7  1540096   1802239  262144   128M unknown
23 /dev/mmcblk0p8  1802240   244285406 242483167 115.6G unknown
24
25
26 Disk /dev/nvme0n1: 119.24 GiB, 128035676160 bytes, 250069680 sectors
27 Disk model: Colorful CN600 128GB
28 Units: sectors of 1 * 512 = 512 bytes
29 Sector size (logical/physical): 512 bytes / 512 bytes
30 I/O size (minimum/optimal): 512 bytes / 512 bytes
31 Disklabel type: dos
32 Disk identifier: 0x92cdbbb5
33
34 Device          Boot Start      End    Sectors   Size Id Type
35 /dev/nvme0n1p1          63 250069679 250069617 119.2G  7 HPFS/NTFS/exFAT
36
37 root@ido:/# df -h
38 文件系统          容量  已用  可用  已用% 挂载点
39 /dev/root          114G  8.8G  105G   8% /
40 devtmpfs           3.9G   0  3.9G   0% /dev
41 tmpfs              3.9G   0  3.9G   0% /dev/shm
42 tmpfs              792M  4.0M  788M   1% /run
43 tmpfs              5.0M  4.0K  5.0M   1% /run/lock
44 tmpfs              3.9G   0  3.9G   0% /sys/fs/cgroup
45 tmpfs              3.9G  8.0K  3.9G   1% /tmp

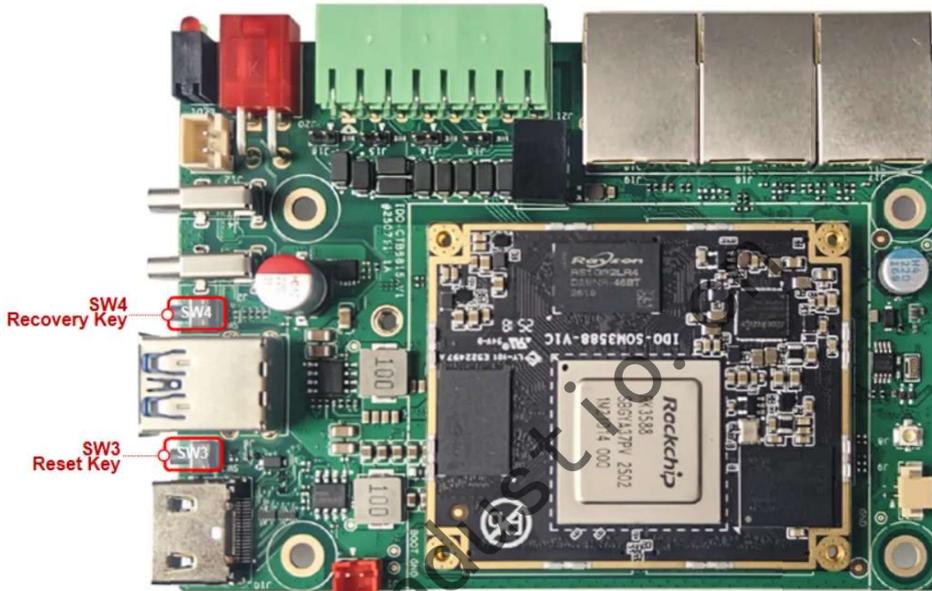
```

```

46 /dev/mmcblk0p6 2.0G 292K 2.0G 1% /userdata
47 /dev/mmcblk0p7 124M 12M 112M 10% /oem
48 tmpfs 792M 24K 792M 1% /run/user/1000
49 /dev/nvme0n1p1 125034808 29531856 95502952 24% /mnt/m2
50

```

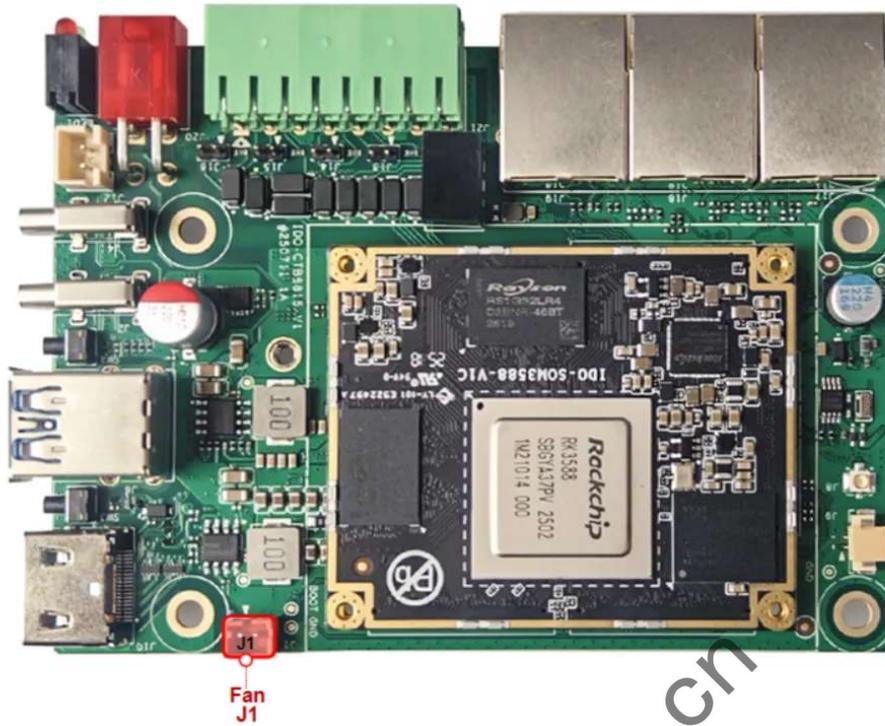
2.11. 按键



SW3: 复位按键，按下松开，系统重启。

| | |
|-----|----------|
| SW3 | RESET |
| SW4 | RECOVERY |

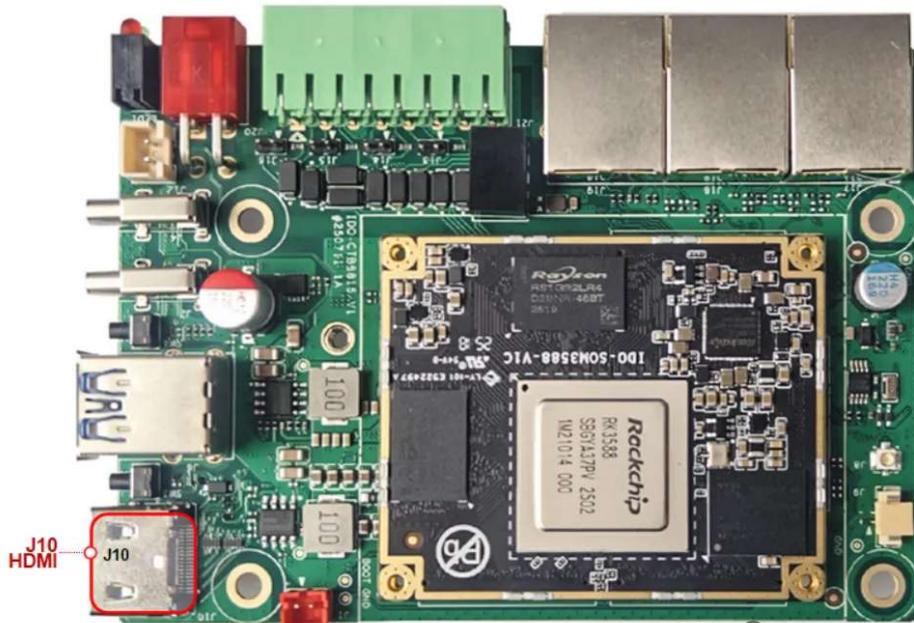
2.12. FAN



```
▼ Bash |
1  ##打开风扇
2  echo 1 > /sys/class/leds/fan-pwr/brightness
3  ##关闭风扇
4  echo 0 > /sys/class/leds/fan-pwr/brightness
```

2.13. 显示

2.13.1. HDMI

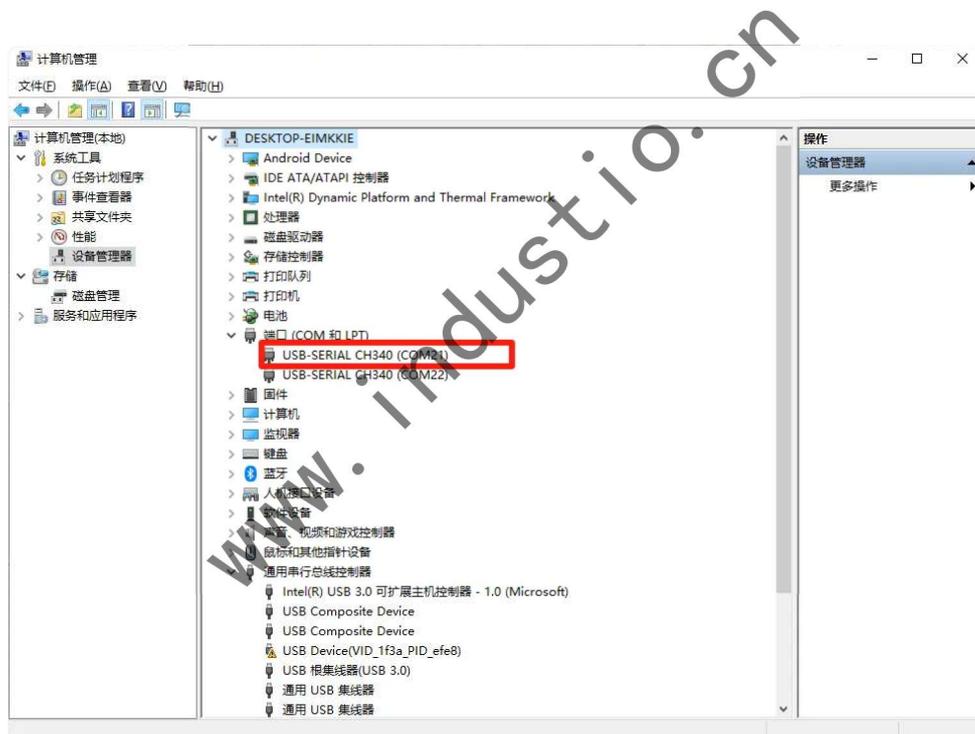
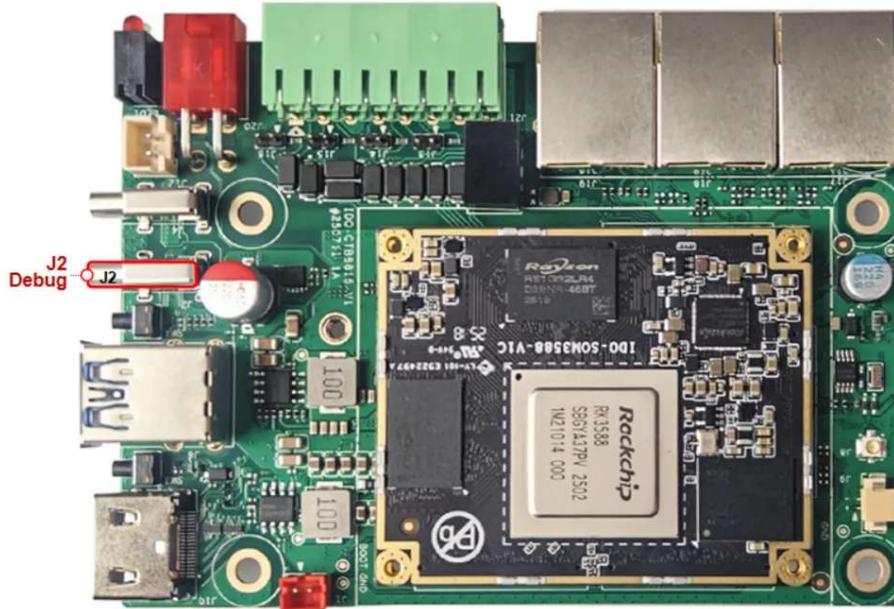


3. DEBIAN12接口使用方法

3.1. 登录

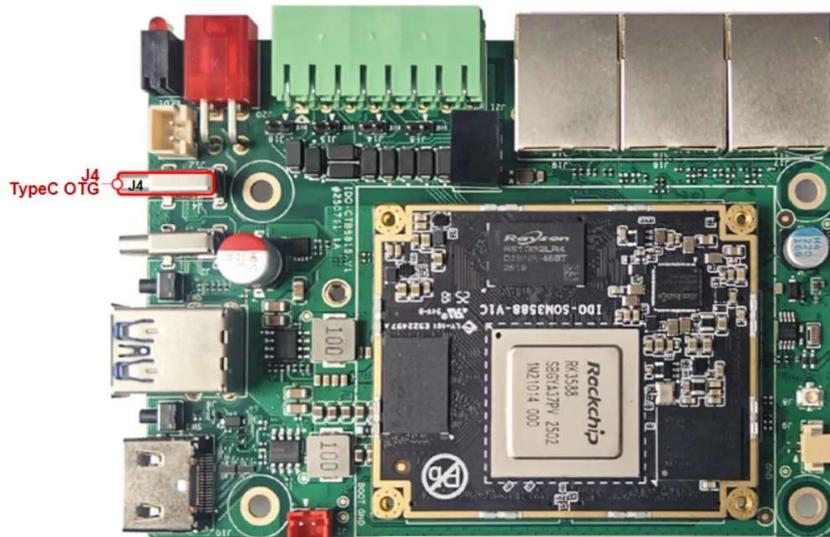
3.1.1. 串口

准备一根type-C数据线，接入电脑，串口波特率设置为1500000



3.1.2. adb

准备一根type-C数据线，一端接入电脑



```
C:\WINDOWS\system32\cmd.exe - adb shell
Microsoft Windows [版本 10.0.19045.6093]
(c) Microsoft Corporation. 保留所有权利。

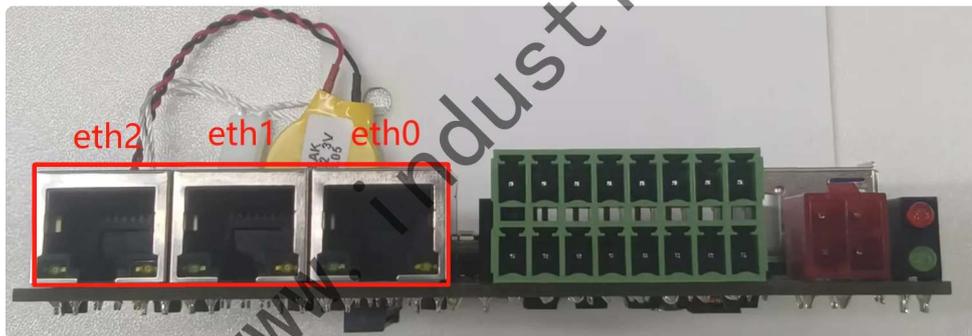
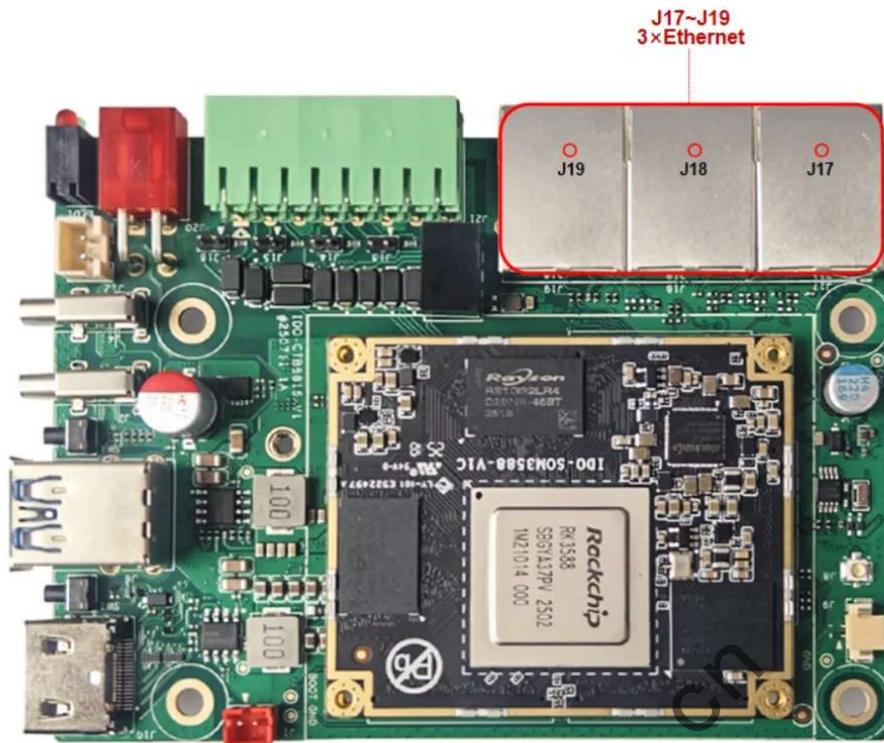
C:\Users\Vivek>
C:\Users\Vivek>
C:\Users\Vivek>
C:\Users\Vivek>
C:\Users\Vivek>adb shell
root@industio-desktop:/# ls
ls
bin  etc  lost+found  oem  root  snap  sys  userdata  vendor
boot  home  media  opt  run  srv  system  usr
dev  lib  mnt  proc  sbin  swapfile  tmp  var
root@industio-desktop:/#
```

3.1.3. ssh

ssh root@ipaddress

密码: 123456

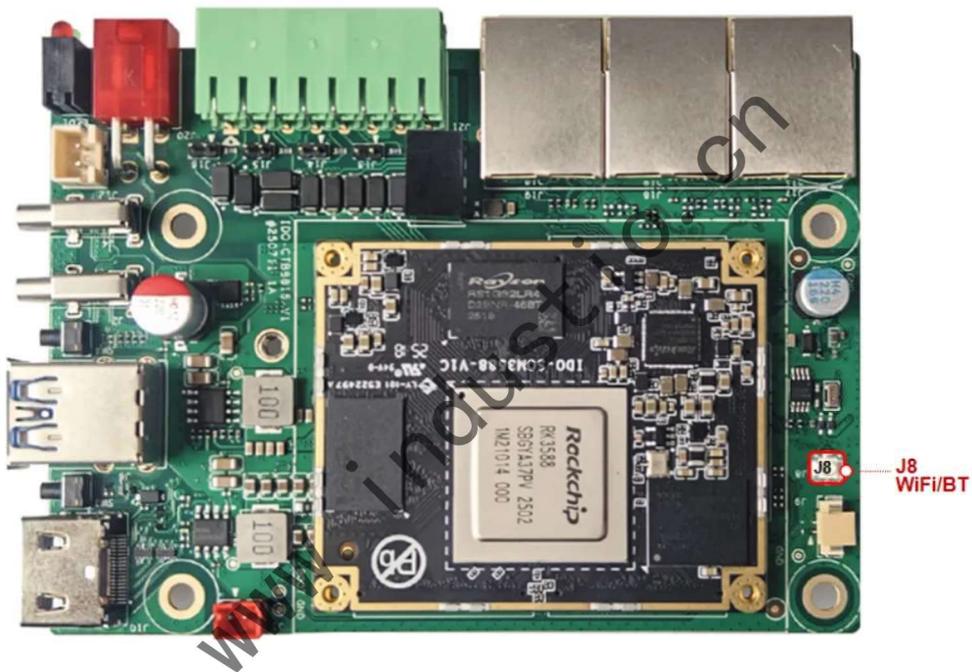
3.2. 以太网

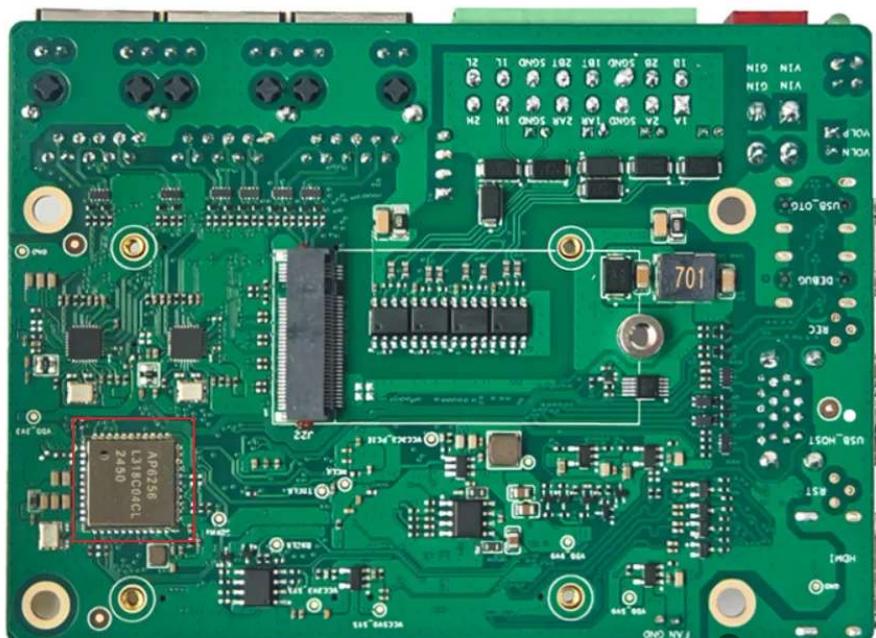


```
1  $ ifconfig
2  docker0  Link encap:Ethernet  HWaddr 02:42:01:8d:d8:8a
3           inet addr:172.17.0.1  Bcast:172.17.255.255  Mask:255.255.0.0
4           UP BROADCAST MULTICAST  MTU:1500  Metric:1
5           RX packets:0 errors:0 dropped:0 overruns:0 frame:0
6           TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
7           collisions:0 txqueuelen:0
8           RX bytes:0 TX bytes:0
9
10 lo       Link encap:Local Loopback
11          inet addr:127.0.0.1  Mask:255.0.0.0
12          inet6 addr: ::1/128 Scope: Host
13          UP LOOPBACK RUNNING  MTU:65536  Metric:1
14          RX packets:240 errors:0 dropped:0 overruns:0 frame:0
15          TX packets:240 errors:0 dropped:0 overruns:0 carrier:0
16          collisions:0 txqueuelen:1000
17          RX bytes:22080 TX bytes:22080
18
19 eth0     Link encap:Ethernet  HWaddr 0a:dc:b0:80:a4:4b  Driver rk_gmac-dw
mac
20          inet6 addr: fe80::8dc:b0ff:fe80:a44b/64 Scope: Link
21          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
22          RX packets:5 errors:0 dropped:0 overruns:0 frame:0
23          TX packets:5 errors:0 dropped:0 overruns:0 carrier:0
24          collisions:0 txqueuelen:1000
25          RX bytes:362 TX bytes:1004
26          Interrupt:71
27
28 eth1     Link encap:Ethernet  HWaddr 0e:e4:0f:db:34:72  Driver yt6801
29          UP BROADCAST MULTICAST  MTU:1500  Metric:1
30          RX packets:2167 errors:0 dropped:0 overruns:0 frame:0
31          TX packets:2141 errors:0 dropped:0 overruns:0 carrier:0
32          collisions:0 txqueuelen:1000
33          RX bytes:304107 TX bytes:2548456
34          Interrupt:117 Base address:0x8000
35
36 eth2     Link encap:Ethernet  HWaddr 5a:a3:67:6a:96:8c  Driver yt6801
37          UP BROADCAST MULTICAST  MTU:1500  Metric:1
38          RX packets:91 errors:0 dropped:0 overruns:0 frame:0
39          TX packets:72 errors:0 dropped:0 overruns:0 carrier:0
40          collisions:0 txqueuelen:1000
41          RX bytes:19493 TX bytes:15717
42          Interrupt:127 Base address:0x4000
43
44
```

```
45 wlan0 Link encap:Ethernet HWaddr 9c:b8:b4:9a:73:18 Driver bcm5dh_sdm
46 mc
47 inet6 addr: fe80::9eb8:b4ff:fe9a:7318/64 Scope: Link
48 UP BROADCAST MULTICAST MTU:1500 Metric:1
49 RX packets:0 errors:0 dropped:0 overruns:0 frame:0
50 TX packets:10 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:0 TX bytes:796
```

3.3. WIFIBT





3.3.1. wifi

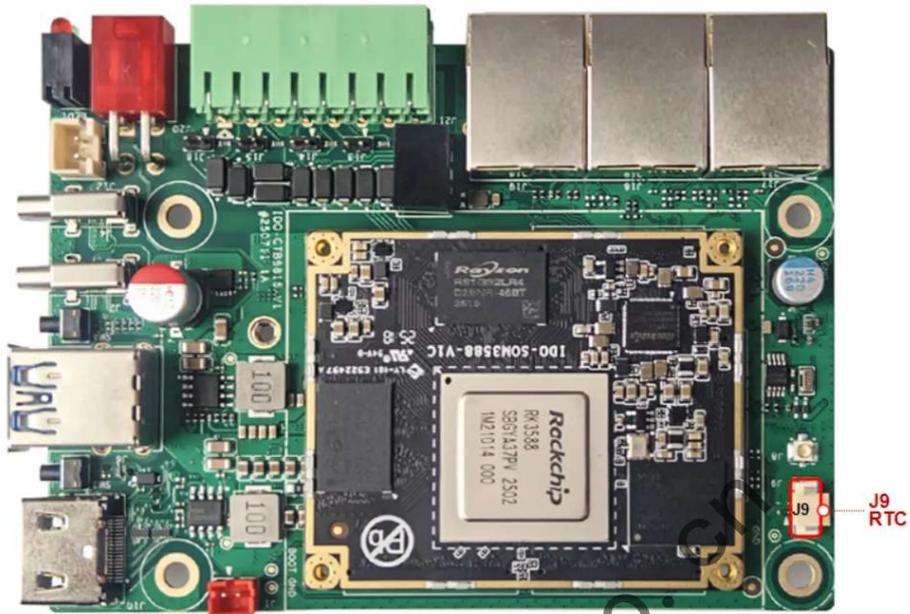
```
▼ | Bash  
1 $ nmcli dev wifi list #查询wifi列表  
2 $ nmcli dev wifi connect 账号 password 密码 ifname wlan0 #连接热点  
3 $ nmcli connection show #查看连接状态
```

3.3.2. 蓝牙

```
▼ | Bash  
1 $ bluetoothctl  
2 [bluetooth]# bluetoothctl  
3 [bluetooth]# power on  
4 [bluetooth]# scan on  
5 [bluetooth]# devices #查看蓝牙设备  
6 [bluetooth]# trust AC:C4:BD:6C:F2:10 #信任设备  
7 [bluetooth]# pair AC:C4:BD:6C:F2:10 #配对  
8 [bluetooth]# connect AC:C4:BD:6C:F2:10 #连接
```

3.4. RTC

图中标注电池位置



Bash

```
1 $ date -s "2025-10-17 18:34:10"  
2 $ hwclock -w #同步时间到RTC  
3  
4 $ hwclock -r
```

3.5. RS485/RS232

| | | |
|------------|---------|------------|
| /dev/ttyS1 | <-----> | /dev/ttyS6 |
| J21-1 | <-----> | J21-3 |
| J21-2 | <-----> | J21-4 |

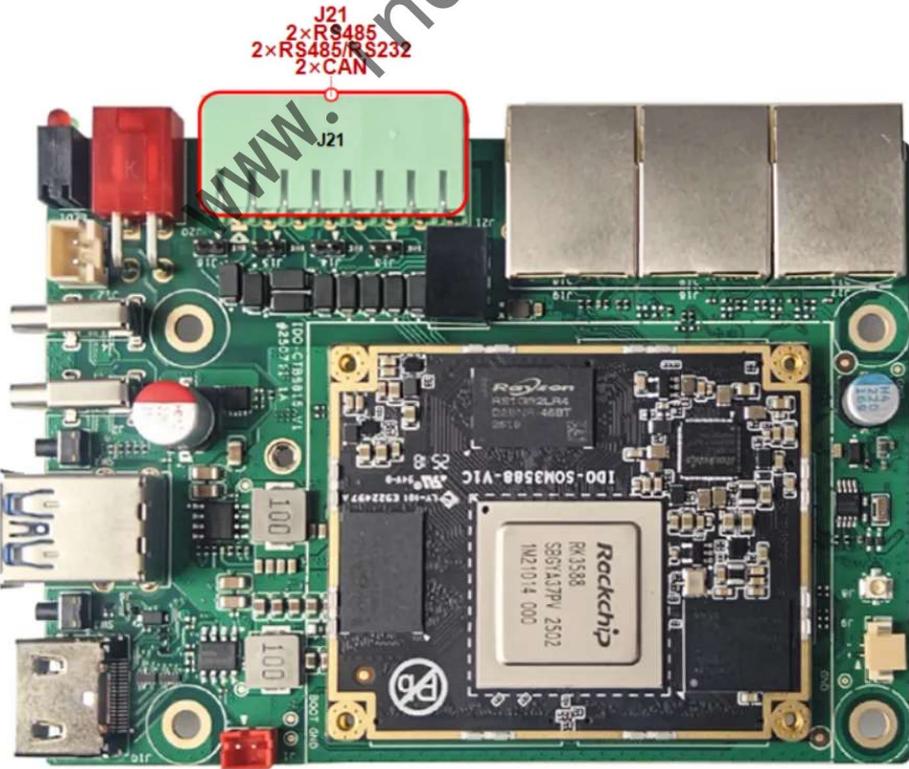
| | | |
|------------|---------|------------|
| R232-1 | | RS232-2 |
| /dev/ttyS3 | <-----> | /dev/ttyS8 |
| J21-7 | <-----> | J21-10 |
| J21-8 | <-----> | J21-9 |

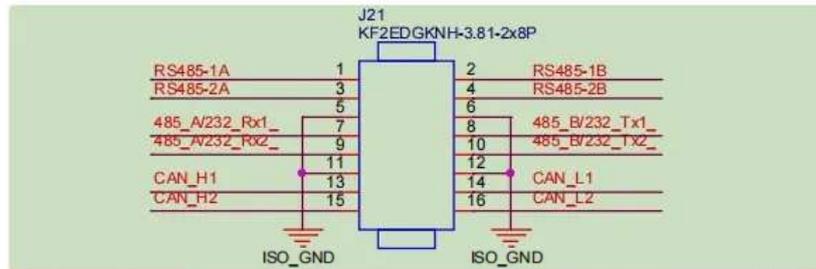
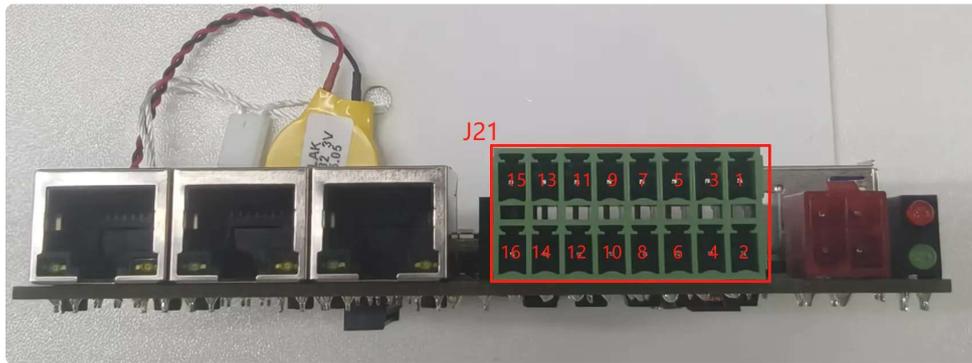
```

1  $ microcom -s 115200 -p /dev/ttyS1

```

3.6. CAN



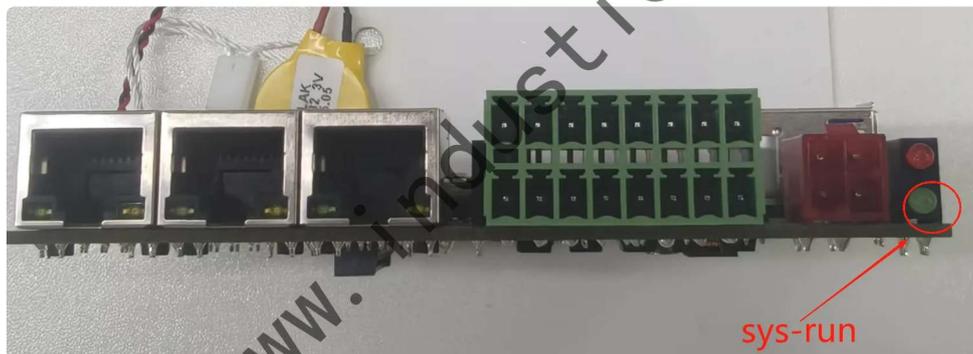
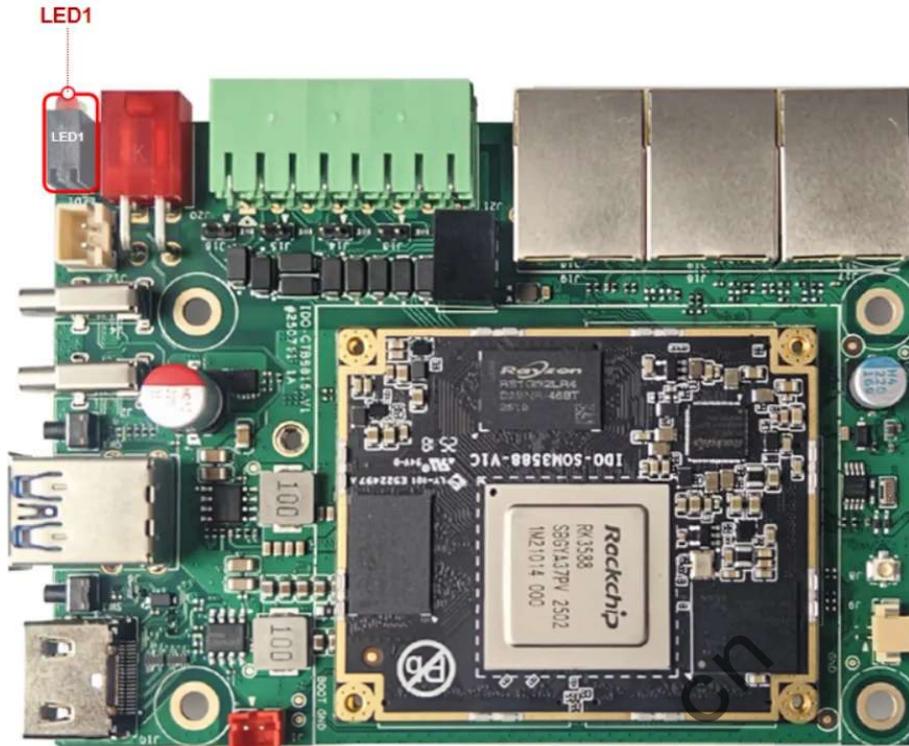


| CAN0 | | CAN1 |
|--------|--------|--------|
| J21-13 | <----> | J21-15 |
| J21-14 | <----> | J21-16 |

```

1 ip link set can0 type can bitrate 1000000
2 ip link set can0 up
3 ip link set can1 type can bitrate 1000000
4 ip link set can1 up
5
6 candump can0& #等待接收
7 cansend can1 123#DEADBEEF #发送
  
```

3.7. Watchdog



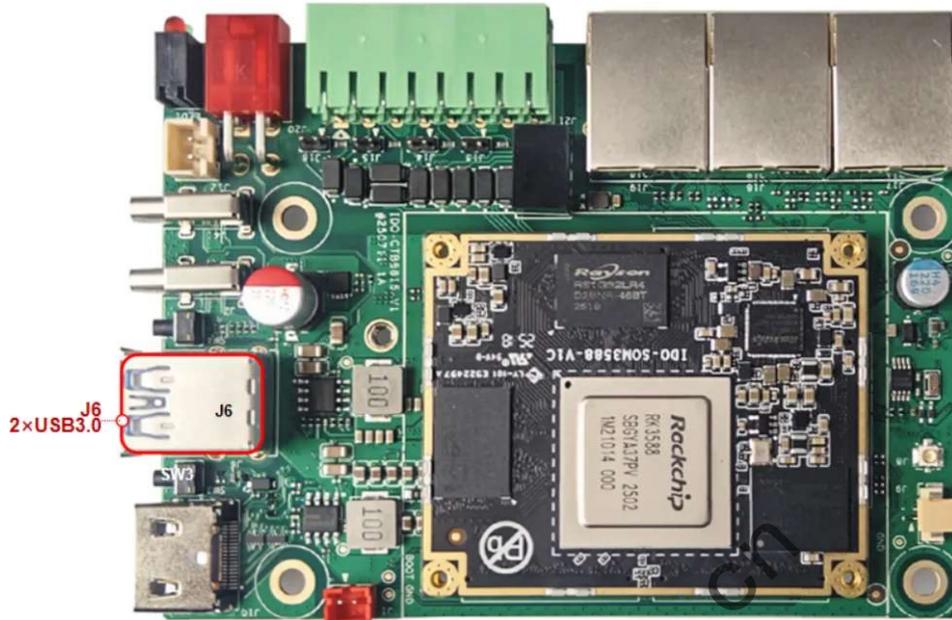
开机后进入系统后，绿灯闪烁。

测试

Bash

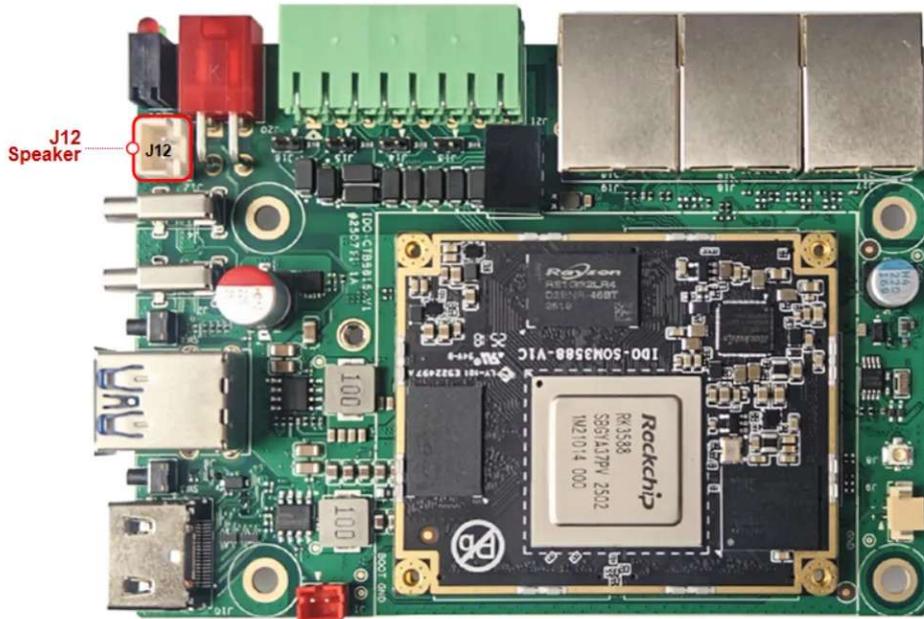
- 1 #测试需要拔掉烧录线 等待5分钟自动重启
- 2 `$ cat /sys/class/leds/sys-led/trigger`
- 3 `none rkill-any rkill-none kbd-scrolllock kbd-numlock kbd-capslock kbd-kan
alock kbd-shiftlock kbd-altgrlock kbd-ctrllock kbd-altlock kbd-shiftrllock k
bd-shiftrlock kbd-ctrllock kbd-ctrlrlock mmc2 timer [heartbeat] backlight
default-on mmc0 rkill0 rkill1 rkill2 rkill3`
- 4
- 5 `$ echo none > /sys/class/leds/sys-led/trigger`

3.8. USB3.0



```
Bash |
1 $ df -h
2 文件系统      容量  已用  可用  已用% 挂载点
3 /dev/root      114G  8.8G  105G   8% /
4 devtmpfs      3.9G   0  3.9G   0% /dev
5 tmpfs         3.9G   0  3.9G   0% /dev/shm
6 tmpfs        792M  4.0M  788M   1% /run
7 tmpfs        5.0M   4.0K  5.0M   1% /run/lock
8 tmpfs        3.9G   0  3.9G   0% /sys/fs/cgroup
9 tmpfs        3.9G   8.0K  3.9G   1% /tmp
10 /dev/mmcbk0p6 2.0G  292K  2.0G   1% /userdata
11 /dev/mmcbk0p7 124M   12M  112M  10% /oem
12 tmpfs        792M   24K  792M   1% /run/user/1000
13 /dev/sda1     30G   3.3M  30G    1% /media/industio/TU100
```

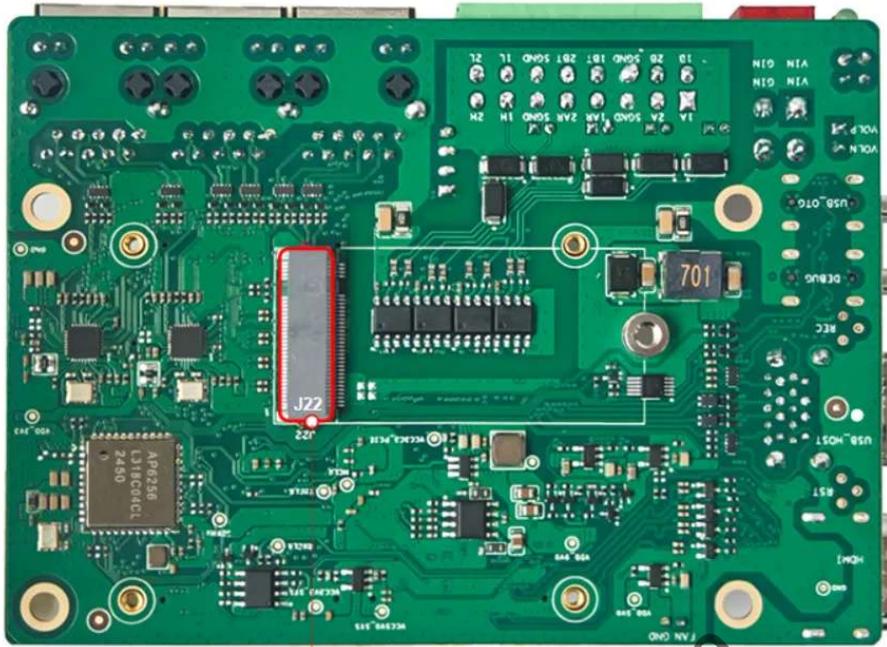
3.9. 声卡



```
1 $ cat /proc/asound/cards
2 0 [rockchiphdmi0 ]: rockchip-hdmi0 - rockchip-hdmi0
3                      rockchip-hdmi0
4 1 [rockchipes8388 ]: rockchip-es8388 - rockchip-es8388
5                      rockchip-es8388
6
7 #声卡
8 $ aplay -D hw:1,0 One_Last_Time.wav
9
10 #HDMI
11 $ aplay -D hw:0,0 One_Last_Time.wav
```

3.10. PCIE

使用m.2固态硬盘测试



M.2 M-Key
J22

www.industio.cn

```

1  $ fdisk -l
2  Disk /dev/ram0: 4 MiB, 4194304 bytes, 8192 sectors
3  Units: sectors of 1 * 512 = 512 bytes
4  Sector size (logical/physical): 512 bytes / 4096 bytes
5  I/O size (minimum/optimal): 4096 bytes / 4096 bytes
6
7
8  Disk /dev/mmcblk0: 116.48 GiB, 125074145280 bytes, 244285440 sectors
9  Units: sectors of 1 * 512 = 512 bytes
10 Sector size (logical/physical): 512 bytes / 512 bytes
11 I/O size (minimum/optimal): 512 bytes / 512 bytes
12 Disklabel type: gpt
13 Disk identifier: 6D3A0000-0000-4733-8000-3DFD00006CE3
14
15 Device          Start      End        Sectors   Size Type
16 /dev/mmcblk0p1  16384     24575     8192      4M unknown
17 /dev/mmcblk0p2  24576     32767     8192      4M unknown
18 /dev/mmcblk0p3  32768     163839    131072    64M unknown
19 /dev/mmcblk0p4  163840    425983    262144    128M unknown
20 /dev/mmcblk0p5  425984    491519    65536     32M unknown
21 /dev/mmcblk0p6  491520    1540095   1048576   512M unknown
22 /dev/mmcblk0p7  1540096   1802239   262144    128M unknown
23 /dev/mmcblk0p8  1802240   244285406 242483167 115.6G unknown
24
25
26 Disk /dev/nvme0n1: 119.24 GiB, 128035676160 bytes, 250069680 sectors
27 Disk model: Colorful CN600 128GB
28 Units: sectors of 1 * 512 = 512 bytes
29 Sector size (logical/physical): 512 bytes / 512 bytes
30 I/O size (minimum/optimal): 512 bytes / 512 bytes
31 Disklabel type: dos
32 Disk identifier: 0x92cdbbb5
33
34 Device          Boot Start      End        Sectors   Size Id Type
35 /dev/nvme0n1p1          63 250069679 250069617 119.2G  7 HPFS/NTFS/exFAT
36
37 root@ido:/# df -h
38 文件系统          容量  已用  可用  已用% 挂载点
39 /dev/root          114G  8.8G  105G   8% /
40 devtmpfs           3.9G   0  3.9G   0% /dev
41 tmpfs              3.9G   0  3.9G   0% /dev/shm
42 tmpfs              792M  4.0M  788M   1% /run
43 tmpfs              5.0M  4.0K  5.0M   1% /run/lock
44 tmpfs              3.9G   0  3.9G   0% /sys/fs/cgroup
45 tmpfs              3.9G  8.0K  3.9G   1% /tmp

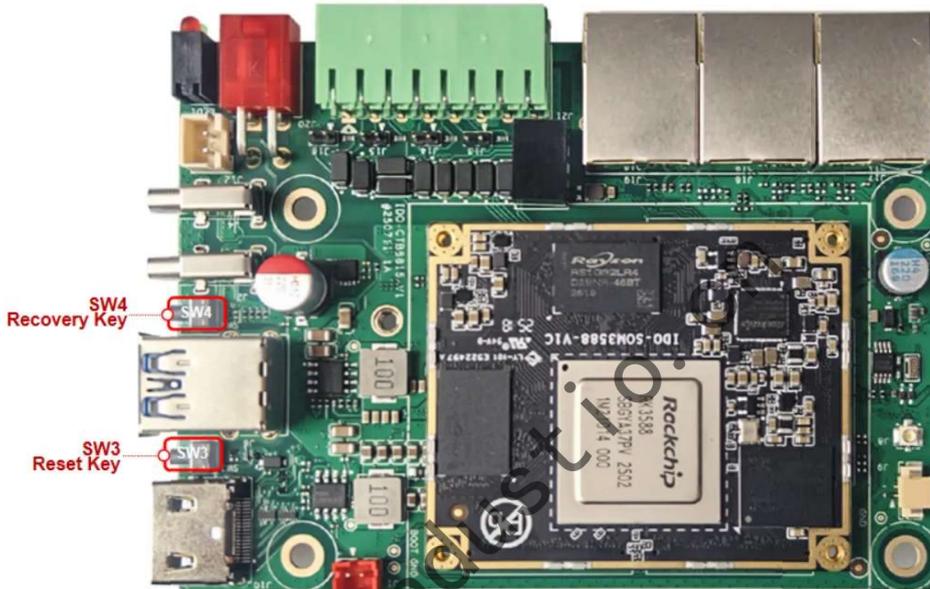
```

```

46 /dev/mmcblk0p6 2.0G 292K 2.0G 1% /userdata
47 /dev/mmcblk0p7 124M 12M 112M 10% /oem
48 tmpfs 792M 24K 792M 1% /run/user/1000
49 /dev/nvme0n1p1 125034808 29531856 95502952 24% /mnt/m2
50

```

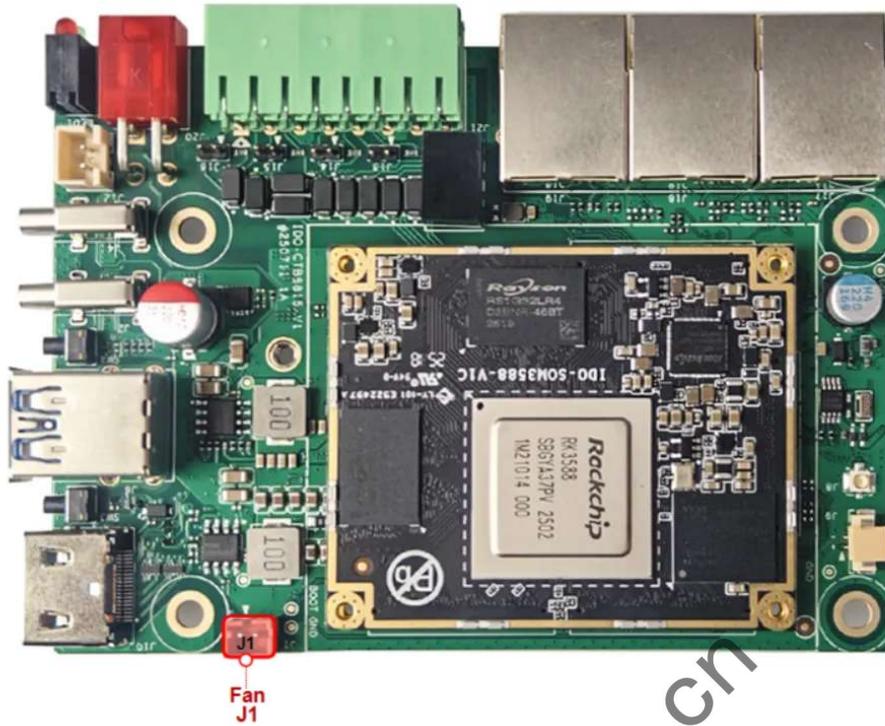
3.11. 按键



SW3: 复位按键，按下松开，系统重启。

| | |
|-----|----------|
| SW3 | RESET |
| SW4 | RECOVERY |

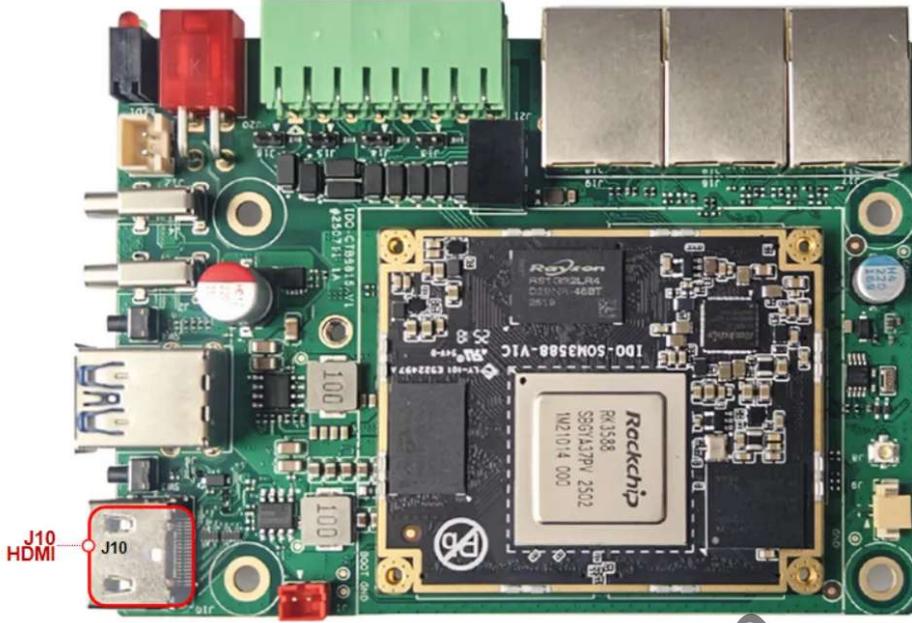
3.12. FAN



```
▼ Bash |
1  ##打开风扇
2  $ echo 1 > /sys/class/leds/fan-pwr/brightness
3  ##关闭风扇
4  $ echo 0 > /sys/class/leds/fan-pwr/brightness
```

3.13. 显示

3.13.1. HDMI



www.industio.cn